

REMARKS

Claim 16 has been amended to change its dependency from claim 2 to claim 1. Claim 20 has been amended to clarify the method as claimed. Support for the amendment may be found in the specification on page 11, lines 3-8. No new matter has been added. Claims 1, 3-20 are currently pending in the present application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

OBJECTION TO CLAIM 16

Claim 16 is objected to for the reasons set forth on page 2 (second paragraph) of the Action. Specifically, regarding claim 16, the Action states that claim 16 depends on a canceled claim. In response, claim 16 has been amended to depend on independent claim 1. Accordingly, it is respectfully requested that the objection to claim 16 be withdrawn.

REJECTION OF CLAIM 20 UNDER 35 U.S.C. 102

Claim 20 is rejected under 35 U.S.C. 102(e) for the reasons set forth on pages 2 and 3 of the Action. Specifically, claim 20 is rejected under 35 U.S.C. 102(e) as being anticipated by Raynal (U.S. Pat. No. 6,643,389), which is hereinafter referred to as "Raynal" or "the Raynal reference."

The rejections under 35 U.S.C. 102(e) are respectfully traversed, at least insofar as applied to the amended claim, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth herein below.

Figure 1 (specifically element 19), Column 3, lines 31-47, lines 48-60, Column 4, lines 7-15, lines 27-29, lines 30-32 and Column 5, lines 38-47 of the Raynal reference are cited as teaching the method for imaging as claimed. It is respectfully submitted that Raynal,

whether alone or in combination, fails to teach or suggest the imaging method as claimed. Specifically, Raynal fails to fairly teach or suggest, inter alia, the following claim limitations: “capturing navigation images of an object by using a navigation sensor array,” as claimed in claim 20.

On page 11, the Final Action further states “Raynal’s mouse device 19 would inherently include a navigation sensor array in order to detect both finger movement speed and direction information,” and refers to col. 3, lines 48-60 to support this position.

Applicant respectfully disagrees with this position and asserts that Raynal’s mouse 19 does not fairly teach or suggest “capturing navigation images of an object by using a navigation sensor array” as claimed. First, the specification omits specific details about the mouse 19 (labeled as “micro-mouse 19” in FIG. 2). However, mouse 19 is described in greater detail in the claims. For example, claim 15 recites: “a mouse device .. including a member physically rotated by movement of a finger concurrently over both said array [array of capacitive sensing elements] and said member.” Similarly claims 1 & 6 recite the following: [mouse 19] including a member proximate said array and physically rotated by movement of the finger concurrently over both sensing element array and member for measuring the speed of finger movement.” Col. 5, lines 60-64 & col. 6, lines 24-28.

Based on Raynal’s description, it is respectfully noted that Raynal’s micro-mouse 19 does not appear to capture navigation images or any images for that matter. In contrast, mouse 19 appears to use the physical rotation of a member (e.g., a track-ball or scroll-device) to measure the speed of the finger. In other words, mouse 19 operates in a manner that is very different from the operation of the navigation array as claimed. Whereas the mouse 19 utilizes rotation of the member to measure the speed of the finger, the navigation array, as claimed, captures navigation images that are then used to determine finger movement. A

similar argument was presented in the previous Amendment and Response dated Mar. 22, 2004, but the Action does not address this point.

In view of the foregoing, it is respectfully submitted that the Raynal reference fails to teach or suggest the imaging method as claimed. Accordingly, it is respectfully requested that the rejection of claim 20 under 35 U.S.C. section 102(e) be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. 103

Rejection of Claims 1, 3-5, 9-12, 15, and 17-19 under 35 U.S.C. 103(a) – Raynal Reference in view of Bohn Reference

Claims 1, 3-5, 9-12, 15, and 17-19 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 6 of the Action on pages 3 to 8. Specifically, claims 1, 3-5, 9-12, 15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (U.S. Pat. No. 6,643,389), in view of Bohn et al. (U.S. Pat. No. 6,207,945), which is hereinafter referred to as the Bohn reference.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

I. Bohn Reference Fails To Meet The Requirement That References Be In An Art That Is Analogous To That Of The Invention

It is well-settled law that the references used in an obviousness rejection must either be in the field of the inventor's endeavor or reasonably pertinent to the specific problem with which the inventor was involved. (See In re Deminski, 796 F. 2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986)). Furthermore, this requirement may be stated differently as the

following inquiry: whether the references relied upon by the Examiner are in an art analogous to that of the invention. (See Wang Labs., Inc. v. Toshiba Corp., 26 USPQ 2d 1767, 1773 (Fed. Cir. 1993))

The policy or rationale behind this requirement is explained as follows:

In resolving the question of obviousness under 35 U.S.C. § 103, we presume full knowledge by the inventor of all the prior art in the field of his endeavor. However, with regard to prior art outside the field of his endeavor, we only presume knowledge from those arts reasonably pertinent to the particular problem with which the inventor was involved. The rationale behind this rule precluding rejections based on combination of teachings from references from non-analogous arts is the realization that an inventor could not possibly be aware of every teaching in every art. Thus, we attempt to more closely approximate the reality of the circumstances surrounding the making of an invention by only presuming knowledge by the inventor of prior art in the field of his endeavor and in analogous arts. The determination that a reference is from a nonanalogous art is therefore two-fold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved. In re Wood, 202 USPQ 171, 174 (C.C.P.A. 1979) [emphasis added.]

Moreover, the Federal Circuit has set forth how to determine whether a reference is reasonably pertinent to the particular problem with which the inventor was involved.

Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. . . . A reference is reasonably pertinent if . . . it is one which, because of the matter with which it deals, logically would have commended itself to the inventor's attention in considering his problem. . . . If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, . . . [i]f it is directed to a different purpose, the inventor would accordingly have had less

motivation or occasion to consider it. In re Clay, 23 USPQ 2d 1058, 1060–61 (Fed. Cir. 1992)

It is respectfully submitted that the Bohn reference is neither in the field of the invention nor reasonably pertinent to the specific problem with which the invention is involved. The previous response, dated Mar. 22, 2004, sets forth specific arguments to support this position on pages 11-14 (e.g., different classifications, different applications, and different approaches to solve very different problems). These arguments are not addressed in the Final Office Action. It is respectfully requested that these points be addressed in a subsequent Action.

A. Bohn Reference Is Not In The Field Of The Inventor's Endeavor

The Bohn reference is not in the same field of endeavor as the claimed invention. Furthermore, the Bohn reference is not in the same field of endeavor as the Raynal reference. The Final Office Action states that Raynal and Bohn are combinable because “they are from similar problem solving area of capturing an image.” However, it is respectfully submitted that the Action has characterized the field of endeavor at such a high level of abstraction as to make the analogous art requirement meaningless.

First, imaging a finger involves different considerations and requirements than scanning a page of text with a hand-held scanner. For example, the fingerprint imager, as claimed, is configured to image a fingerprint that has a width of about half an inch in a single pass of the finger across the imager. In contrast, the Bohn hand-held scanner is configured to scans images with an average width of about eight inches (e.g., standard width of 8.5 x 11 paper is 8.5 inches) by using multiple passes. As advanced hereinafter, Bohn requires accurate position information to combine the information obtained from the different passes, which is unnecessary in the fingerprint imager as claimed.

Second, whereas the fingerprint imager is stationary, and a finger is moved with respect thereto, the Bohn scanner is moved with respect to a stationary image (e.g., a sheet of paper). It is respectfully noted that the hand-held scanner of Bohn moves with respect to a fixed image (e.g., text). See col. 8, lines 17-18. In contrast, the fingerprint imager is stationary, and the fingerprint is moved with respect to the imaging array in a direction that is generally perpendicular to the first axis, as claimed.

Third, whereas the fingerprint imager involves a compact single chip solution, the Bohn scanner appears to include multiple integrated circuits that implement a complex and costly system.

Furthermore, Bohn's hand-held scanner appears to be more complex, more costly, directed to solving a very different problem, and directed to an entirely different application than the fingerprint imager according to the invention. For example, even the Bohn reference itself does not characterize its field of invention as "any image capture application". Instead, the Bohn reference limits its field of invention to "position sensing devices" and "a hand-held scanner having a position sensing device integrated into the imaging portion of the hand-held scanner." In contrast, the invention as claimed is directed to a fingerprint imager (independent claim 1 and claims dependent thereon) and an imager for "imaging a portion of a fingerprint" (claim 19). As argued previously, the different classifications (class and subclass) of the Bohn versus the Raynal reference further support the position that Bohn is not in the same field of endeavor as Raynal and the claimed invention.

The Federal Circuit has warned against characterizing the field of endeavor at an unreasonably broad level:

The Allen-Bradley art is not in the same field of endeavor as the claimed subject matter merely because it relates to memories. It involves memory circuits in which modules of varying sizes may be added or replaced; in contrast, the subject patents

teach compact modular memories. Wang Labs., Inc. v. Toshiba Corp., 26 USPQ 2d 1767, 1773 (Fed. Cir. 1993)

Accordingly, it is respectfully requested that the broad range of the Bohn patent asserted by the Action be appropriately narrowed to give reasonable meaning to the analogous art requirement. When appropriately narrowed, it will become evident that the range of the Bohn reference does not cover the invention as claimed (i.e., Bohn is not in the same field of endeavor as the claimed invention).

B. Bohn Reference Is Not Reasonably Pertinent To The Specific Problem With Which The Inventor Was Involved

The Bohn reference is not reasonably pertinent to the specific problem with which the inventor was involved. The Final Office Action states that Raynal and Bohn are combinable because “they are from similar problem solving area of capturing an image.” However, it is respectfully submitted that the Action has once again characterized the problem faced by the Bohn reference and the invention at such a high level of abstraction as to make the analogous art requirement meaningless.

The Bohn reference and the invention are directed to addressing or solving two very different problems. The problems are dictated by the specific applications for the inventions. In other words, the Raynal and Bohn references are very different approaches to very different problems. The Raynal reference is directed to an improved fingerprint imager. In sharp contrast, the Bohn reference is directed to a hand-held scanner, which, as can be appreciated, has a set of technical challenges and difficulties that is very different from the challenges involved in capturing fingerprints.

For example, Bohn’s application is a hand-held scanner that can be used by a user to manually scan a portion of the page in a meandering path (see col. 6, lines 5-11). Because the

scan is less than the width of the page, the scan line portions of each scan must be combined via “stitching software” (see col. 13, line 65 to col. 14, line 6). Unfortunately, a user’s random movement causes the scanner to generate image data representing scan lines that are typically skewed relative to each other (see col. 6, lines 23-36). The stitching software requires mechanisms to accurately determine the positions of these skewed lines to accurately replicate the image. Consequently, Bohn requires complex and costly circuits (e.g., positioning processor 150, imaging processor 152, etc.) to determine the position of the scanner relative to an object being imaged.

In sharp contrast, the invention, as claimed, requires only one pass (i.e., no stitching is needed) since the width of the row of sensors is approximately the same as the width of the fingerprint. The fingerprint imager, as claimed, employs the navigation images to control when the imaging array captures a sub-image (e.g., a row) of the fingerprint. Accordingly, the fingerprint imager according to the invention is designed to provide a compact solution (e.g., a single sensor chip) with minimum size, low cost, and low complexity. In contrast, Bohn’s scanner relates to a larger, more costly, more complex for hand-held scanning applications that appears to include multiple integrated circuits, where the width of the scan is less than the width of the image to be scanned.

The Federal Circuit has warned against characterizing the specific problem the inventor attempted to solve at an unreasonably broad level:

Wang's SIMMs were designed to provide compact computer memory with minimum size, low cost, easy repairability, and easy expandability. . . . In contrast, the Allen-Bradley patent relates to a memory circuit for a larger, more costly industrial controller. . . . Thus, there is substantial evidence in the record to support a finding that the Allen-Bradley prior art is not reasonably pertinent and is not analogous. Wang Labs., Inc. v. Toshiba Corp., 26 USPQ 2d 1767, 1773 (Fed. Cir. 1993)

Accordingly, it is respectfully requested that the Action's broad characterization of the problem that Bohn attempted to solve be appropriately narrowed to give reasonable meaning to the analogous art requirement. When appropriately narrowed, it will become evident that the problem that Bohn attempts to solve is very different from the problem addressed by the invention as claimed.

II. Missing Motivation to Combine the Raynal Reference with the Bohn Reference

The Action that states, "it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the navigation array and navigation circuit disclosed by Raynal to include capturing images and determining movement information along a first and second axis as taught by Bohn because it provides greater accuracy in determining the relative movement between the object and the imager."

However, there does not appear to be anything in the cited references that teach or suggest that the Raynal approach is inaccurate or requires greater accuracy. In fact it appears that one skilled in the art would not utilize the mechanisms of Bohn since they would add complexity and cost, yet be unnecessary for the application of imaging a fingerprint. As advanced previously, Bohn needs accurate position information to stitch together information from multiple passes, whereas the fingerprint imager as claimed, uses a single pass and does not require the complex stitching process. In other words, much of the position information gathered by Bohn is probably not useful or needed by the fingerprint imager as claimed.

Moreover, in addition to missing a motivation to combine, the actual combination as proposed by the Action is highly suspect because there is no indication that the proposed combination would operate, given the differing requirements and design considerations of

these different applications. Consequently, it is respectfully submitted that without the teachings of the present invention, the incorporation of a navigation array with an imaging array in a fingerprint imager would not be obvious. Furthermore, Raynal would not be combined with Bohn because of the differences in the field of invention, differences in the type of problem being solved, differences in design considerations, and differences in the overall approach the different design considerations. Accordingly, it appears that the Raynal approach is a complete system that does not require any modification or added complexity.

Based on the reasons advanced above, it is respectfully submitted that the claimed invention has been improperly used as an instruction manual or “template” to piece together the teachings of the Raynal reference and the Bohn reference so that the claimed invention is rendered obvious. Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 1, 3-5, 9-12, 15, and 17-19 patentably distinguish over Raynal in view of Bohn. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Rejection of Claims 13, 14 & 16 under 35 U.S.C. 103(a) – Raynal and Bohn References in
view of Akizuki Reference

Claims 13, 14 & 16 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 7 of the Action on pages 8 & 9. Specifically, claims 13, 14 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (U.S. Pat. No. 6,643,389) and Bohn et al. (U.S. Pat. No. 6,207,945), which is hereinafter referred to as the Bohn reference, and further in view of Akizuki (U.S. Pat. No. 6,360,004), which is hereinafter referred to as the Akizuki reference.

The Akizuki reference is cited for teaching that “it is known to implement a fingerprint sensor as a touch-pad, or a stand-alone unit, wherein the fingerprint imager further comprises a capacitive sensor having a surface along which a finger is moved and an assembly for housing the capacitive sensor.” In particular, col. 2, lines 62-67 and col. 2, lines 17-20 of Akizuki are cited.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

It is respectfully submitted that the Raynal reference, whether alone or in combination with Akizuki, fails to teach or suggest “the fingerprint imager is implemented in a stand-alone unit and wherein the fingerprint imager further comprises: a) a capacitive sensor having a surface along which a finger is moved; and b) an assembly for housing the capacitive sensor.” For the reasons advanced previously, which are incorporated herein by reference, Raynal, whether alone or in combination with Bohn, fails to teach or suggest one or more claimed limitations of the independent claims. Akizuki does not remedy the deficiencies of Raynal and Bohn, nor does Akizuki supplement the teachings of Raynal and Bohn in a manner to render the claimed invention obvious.

Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 13 and 14 patentably distinguish over Raynal in view of Bohn further in view of Akizuki. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Rejection of Claims 6-8 under 35 U.S.C. 103(a) – Raynal and Bohn References in view of

Brownlee Reference

Claims 6-8 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 8 of the Action on pages 9-10. Specifically, claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (U.S. Pat. No. 6,643,389) and Bohn et al. (U.S. Pat. No. 6,207,945), which is hereinafter referred to as the Bohn reference, and further in view of Brownlee (U.S. Pat. No. 6,282,303), which is hereinafter referred to as the Brownlee reference.

The rejections under 35 U.S.C. 103 are respectfully traversed, at least insofar as applied to the amended claims, and reconsideration and reexamination of the application is respectfully requested for the reasons set forth hereinbelow.

The Brownlee reference is cited for teaching the implementation of a fingerprint imager in a stand-alone unit with optics for focusing light onto the surface. For the reasons advanced previously, which are incorporated herein by reference, Raynal, whether alone or in combination with Bohn, fails to teach or suggest one or more claimed limitations of the independent claims. Brownlee does not remedy the deficiencies of Raynal and Bohn, nor does Brownlee supplement the teachings of Raynal and Bohn in a manner to render the claimed invention obvious. Specifically, Raynal, whether alone or in combination with Brownlee, fails to teach or suggest, “a) an imaging array having a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time; wherein the fingerprint is moved with respect to the imaging array in a direction that is generally perpendicular to the first axis; and b) a mechanism for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array,” as claimed.

Accordingly, for these reasons, and for the reasons discussed above, it is respectfully submitted that claims 6-8 patentably distinguish over Raynal in view of Bohn further in view of Brownlee. Withdrawal of this rejection under 35 U.S.C. section 103(a) is respectfully requested.

Conclusion

For all the reasons advanced above, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the pending claims are requested, and allowance is earnestly solicited at an early date. The Examiner is invited to telephone the undersigned if the Examiner has any suggestions, thoughts or comments, which might expedite the prosecution of this case.

Respectfully submitted,



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July 6, 2004
(Date)